Historical Root Cellars

Nicole Alderman
steward
staff
Posts: 22373
Location: Pacific Northwest

12994

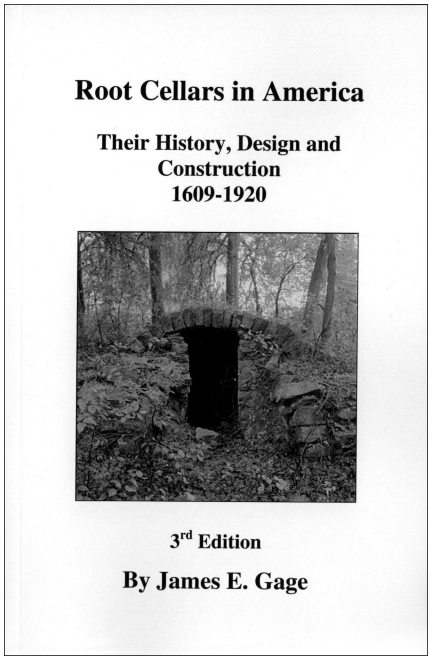
12
I like...

posted 3 years ago

20 +1 Quote Report

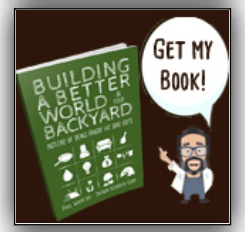
Living in a damp climate, I often wonder how one can make a cellar work here. And then I thought to myself, "What kind of cellars do people make in England and Ireland, where it's usually damp and rainy." This has taken me down so interesting research rabbit holes. I thought I might as well document them here as resources for myself and others.

If you have resources on historical cellar building, I'd love to know more!



First off, this book Root Cellars In America: Their History, Design and Construction, 1609-1920 seems like a really handy resource. You can see quite a few pages here on google. It shows a variety of different cellars with descriptions, and many have plans, too. I'm very much considering buying this book!

reply



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master stewards:

Carla Burke

John F Dean

Stone Cellar from 'Take Shelter' website

Take Shelter: Flint Hills Native Stone Subterranean Structures, A Photographic Research Project by Tom Parish is another amazing resources. It covers underground dwellings, storm shelters, and cellars and their multi-varied building techniques. I really loved learning how a lot of these started out as a home, and were continued in use as storm shelters as well as places to store dairy and food. Some were even used as smoke houses!

Just a few of the exteriors:

And just a few of the interiors:

reply

Timothy Norton
Jay Angler

stewards:
paul wheaton
Pearl Sutton
Eric Hanson

master gardeners:
Christopher Weeks
M Ljin

gardeners:
thomas rubino
Megan Palmer
Benjamin Dinkel

I've discovered it's pretty easy to get pictures of the OUTSIDES of these old cellars, but not many of the INSIDES. However, I did find a guy, Adventurous Gardener who is excavating and restoring an old cellar. I loved getting such a good look at the inside of one of these old structures!

19th Century Root Cellar Into Tiny Stone Cabin 2022 Recap

Some general resources:

- Family Food Garden's Guide to Rootcellaring A general overview of different types of cellars, with links to a few designs.
- Kezzabeth's Why cellars need to breathe A good explanation of what happens when you mix breathable materials like lime mortar and natural bricks, with non-breathable ones like cement mortar, cement bricks, and weather barriers.
- Elliston, Newfoundland's Root Cellars Lots of pictures of the exterior of cellars, but not of the interiors.

reply

More resources I want to read:

Stone Chambers: Root Cellars, Ice Houses, or Native American Ceremonial Structures?

Handbook for Building a Root Cellar—Sustainable Heritage Report No. 8

More stuff from Mary and James Gage. Their work seems to pop up a lot when searching for historical root cellars, stone work, and subterranean structures. Just look at the list of books they've authored, listed at Goodreads: Mary Gage, for example:

- A Handbook of Stone Structures in Northeastern United States
- The Art of Splitting Stone: Early Rock Quarrying Methods in Pre-Industrial New England, 1630-1825
- A Guide to New England Stone Structures: Stone Cairns, Stone Walls, Standing Stones, Chambers, Foundations, Wells, Culverts, Quarries and Other Structures

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Steve Zoma

Posts: 720

154

posted 3 years ago

5 +1 Quote Report

We have the same problem here, but besides being wet and laden with moisture from the coast, we also get really cold.

One of the more famous places here with root cellars is Fort Knox... no not THAT Fort Knox, America's first Fort Knox. I can't remember how many it has, but something like seven of these.

I am not sure if it helps, but they are made pretty shallow, but underground, with brick floors and arched granite overhead.

Food-Storage.JPG

reply

Nicole Alderman

steward

staff

Posts: 22373

Location: Pacific Northwest

12994

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I like...

posted 3 years ago

2 +1 Quote Report

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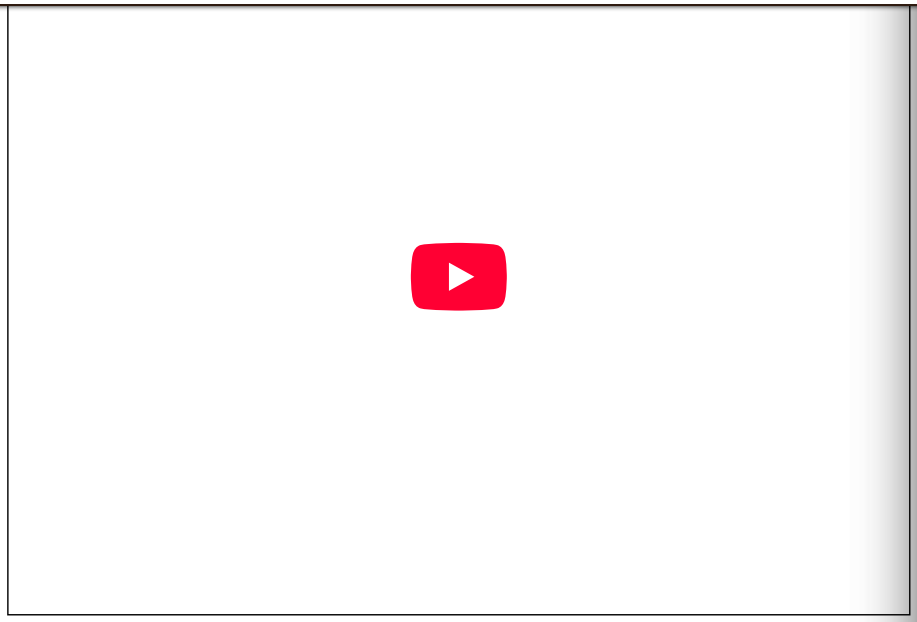
>
> I am not sure if it helps, but they are made pretty shallow, but underground, with brick floors and arched granite overhead.

I had no idea there was more than one Fort Knox. Learn something new every day!

I found a video of it, and I think I spotted one of the cellars at about 9 minutes in!

reply



The forts I've seen on my side of the US are all cement and metal. I wonder if we do have older ones still in existence? *Searches for old forts* Alas, our oldest (Fort Worden) was made in 1897, and made of concrete, as they wanted it to be very "modern"! The concrete forts are still a blast to explore (especially when you're a kid making echoing sounds in the dark halls), but they're not nearly as majestic as your Fort Knox!

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12

I like...

Mary Haasch

Posts: 48

Location: NE Wisconsin USA; Zone 4b -25F to -20F

10 4

posted 2 years ago

1 +1 Quote Report

Any good resources for a root cellar into the side of a hill in sandy soil?

Making my world a better place, one permaculture decision at a time.

Steve Zoma

Posts: 720

posted 2 years ago

2 +1 Quote Report

reply

> **Mary Haasch wrote:**
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I am not sure if your situation but if it was me I might rent an excavator and bury a 20 foot container into that hillside. The container could take the earth weight, but with its back doors to daylight have a nice seal against rodents and be quick and durable.

But that is assuming you have $3000 to spend?

Mary Haasch

Posts: 48

Location: NE Wisconsin USA; Zone 4b -25F to -20F

10 4

posted 2 years ago

6 +1 Quote Report

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>
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>
> But that is assuming you have $3000 to spend?

I'm assuming you mean a shipping container. I've seen some disaster type pictures that the shipping containers can't take the weight of the soil without some structural improvements. Has anyone ever used a tornado shelter as a root cellar?

Making my world a better place, one permaculture decision at a time.

R Scott

pollinator

Posts: 4223

Location: Tennessee 7b

348

posted 2 years ago

4 +1 Quote Report

Yes, I know a few that use modern tornado shelters as root cellars instead of the other way around. They ate usually quite small and not buried deep enough for stable temperature. My neighbor piled straw over his foot insulation.

"You must be the change you want to see in the world." "First they ignore you, then they laugh at you, then they fight you, then you win." --Mahatma Gandhi
"Preach the Gospel always, and if necessary, use words." --Francis of Assisi.
"Family farms work when the whole family works the farm." -- Adam Klaus

Gaurī Rasp

pollinator

Posts: 178

Location: Near Asheville North Carolina

64 3

posted 2 years ago

7 +1 Quote Report

EXCELLENT thread with great resources! I look forward to reading a few of those books & I'm loving the videos. Thank you for putting it together.
I've been trying to figure out how to build a root cellar on our North Carolina homestead which is in a FEMA flood zone - our beautiful creek sometimes overflows - badly - and we have damp sandy soil. So I pretty much gave up unless I want to excavate & bury a waterproof prefab cellar structure. Which is too 💰💰💰 & way too fancy for my needs.
My solution? I barter a friend to store my canning & frozen produce in their cellar. In exchange they can use as much as they'd like! Pumpkin, applesauce, apple slices, tomatoes!

---

gardener, homesteader

R Sumner

Posts: 42

24

posted 2 years ago

15 +1 Quote Report

We have an old stone root cellar here but the (original?) roof was rotting out so we replaced it last year. Attached is a long shot of the completed earth roof.

I have another fifteen photos of the construction if this works (and anyone is interested)...

IMGP8707.jpeg

reply

R Sumner
Posts: 42

24

posted 2 years ago

14 +1 Quote Report

A few photos from earlier in the construction:

IMGP8669.jpeg

Interior framing on top of original stonework.

IMGP8666.jpeg

reply

I think this double door construction is also mostly original.

IMGP8682.jpeg

We sprang the cash for this self-healing polymer waterproofing layer someone recommended to us.

Jesse Glessner

Posts: 490

Location: Indiana

64 **5**

posted 2 years ago

4 +1 Quote Report

> **R Sumner wrote:**
> We have an old stone root cellar here but the (original?) roof was rotting out so we replaced it last year. Attached is a long shot of the completed earth roof. I have another fifteen photos of the construction if this works (and anyone is interested)...

What state or general area are you in?
With double doors I'm assuming it is somewhere that it gets VERY cold during the winter. But, the double doors work with the summer weather as well, keeping the inside nice and Moist and Cool too!

JayGee

R Sumner

Posts: 42

posted 2 years ago

8 +1 reply

and light a candle in there, that's a little low.)

We are still working out procedures -- part of the rebuild was putting in more ventilation and (just recently) a solar powered fan. It got pretty warm in there this past summer.

Thanks for your interest! I am checking with some of the folk who have been here for longer (say, 50 years) about posting more pics and possibly some background about the roof failure(s) in another thread.

Trace Oswald
pollinator
Posts: 3987
Location: 4b

1457

I like...

posted 2 years ago

9 +1 Quote Report

> **Steve Zoma wrote:**
>
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>
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>
> But that is assuming you have $3000 to spend?

As Mary mentioned, burying a shipping container is asking for a disaster. Without very heavy reinforced welded braces, the sides will cave in. Shipping containers are very resistant to straight downward pressure because they have very strong corners, but they can't resist lateral pressure against the walls.

Nicole, I'm glad to have a kindred spirit with regards to underground buildings, shelters, caves, root cellars, and on and on. They absolutely fascinate me. I've been researching for quite some time about building one, and I want to cut one into the side of one of the many steep ridges I have on my land. The only thing keeping me from starting is the idea that I may create a really cool room that then caves in on me 🙂 I'm thinking if I cut into the rock (sand stone really) and leave a dome shape to the roof I'll be okay, but I would like to be sure before I spend many hundreds of hours doing it. I would like a cool root cellar/shelter type of structure as opposed to a nice big stone grave.

A build too cool to miss: Mike's Greenhouse A great example: Joseph's Garden
All the soil info you'll ever need:
Redhawk's excellent soil-building series

reply

Posts: 3987
Location: 4b

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Is there some way to read this without giving that site access to my contact list?

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steward

staff

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>
> Is there some way to read this without giving that site access to my contact list?

I don't know. I gave them my junk email address, and that allowed me to download it. They kept asking me to download other articles/stuff, too, but I just ignored all that (it might have been good things to download, but I'm a naturally suspicious person, so I just ignored it all and kept selecting the article I wanted).

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al aric

Posts: 64
Location: Zone 9a/b

8

I like...

posted 2 years ago

9 +1 Thank Quote Report

Hello,

First of all I want to thank everyone for their contributions to this thread. It's an informative thread. I find myself in the same position as others on this thread. I'm in a sandy loam area and I'd like a root cellar. I've been talking to a friend and he recommended corrugated pipe (8' diameter) buried, then put doors for ends (or on one end). I noticed the shipping container comments. I haven't calculated the load bearing qualities of a shipping container but I had concerns on lateral forces without researching it. The culvert pipe is made to be buried. Is there anyone with first hand experience with burying something in a sand/sandy loam soil? Concerns would be rust, hydraulic activity undermining the structure, collapse, etc. Longevity comes to mind. I love the constructed structures but if I can simply bury something...it would save time. I'm thinking more of a root cellar than a tornado shelter. I've read some material, watched a few videos, but I'm just curious if there a few people on here with first hand experience who can share their experiences?

Thank you

reply

pollinator

Posts: 1148

Location: East of England/ Northeast Bulgaria

445

6
I like...

> **Trace Oswald wrote:**
> Is there some way to read this without giving that site access to my contact list?

If you scroll down on that article page, past the "Related papers" section the full text should be readable there without needing to log in or download.

I'm only 65! That's not to old to learn to be a permie, right?

Trace Oswald

pollinator

Posts: 3987

Location: 4b

1457

I like...

posted 2 years ago

3 +1 Quote Report

> **Jane Mulberry wrote:**
>
> > **Trace Oswald wrote:**
> > Is there some way to read this without giving that site access to my contact list?
>
> If you scroll down on that article page, past the "Related papers" section the full text should be readable there without needing to log in or download.

It doesn't do that for me. I tried two different browsers, chrome and edge. Both force me to click either "continue reading" or "download Free PDF". No matter which I click, it asks me to log in.

If I scroll down below the "Related papers", there is a box that says "Loading Preview" but nothing loads. It may be because I am on my work network.

A build too cool to miss: Mike's Greenhouse A great example: Joseph's Garden
All the soil info you'll ever need:
Redhawk's excellent soil-building series

Jane Mulberry

pollinator

Posts: 1148

Location: East of England/ Northeast Bulgaria

445

6
I like...

posted 2 years ago

2 +1 Quote Report

Bummer that it didn't work for you. I am on Chrome on an Android tablet. I could read the full text, but couldn't print to pdf like I normally can with webpages.

I'm only 65! That's not to old to learn to be a permie, right?

Thekla McDaniels

gardener

staff

Posts: 3605

Location: Western Slope Colorado.

806 4

I like...

posted 2 years ago

3 +1 Quote Report

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> activity undermining the structure, collapse, etc. Longevity comes to mind. I love the constructed

reply

a few people on here with first hand experience who can share their experiences?

Thank you

Would there be some way to make the culvert idea work if you used concrete pipe? You might dodge the rust and corrosion problem, unless there's rebar in the concrete,

and don't mind me while I stumble around the idea, but if potential for corrosion is a major problem, isn't corrosion a result of electrolysis or some other process of conductivity and electron transfer, and if so, could the corrosion be tamed by setting up an anode and a cathode? And which ever the culvert ISN'T, install the other in a location it can easily be replaced ? Kind of like setting up a sacrificial corrosion depot that prevents corrosion in the culvert

So that's my idea, but if it's totally nuts don't worry about hurting my feelings. Odd ball ideas are learning opportunities . Either it'll be a refresher course that realigns by decades old education, or it'll be totally new material for me, or gods only know what contributed to my mis conception!

Best luck: satisfaction

Greatest curse, greed

Mary Haasch

Posts: 48

Location: NE Wisconsin USA; Zone 4b -25F to -20F

10 4

posted 2 years ago

2 +1 Quote Report

Sandy loam soil and a hill to work with so how crazy is this idea? Build a sauna structure and then build the root cellar under the sauna. I guess there's still the problem of side pressure of the soil. I'll be looking at that PDF Reference and maybe answer my own question.

Making my world a better place, one permaculture decision at a time.

Steve Zoma

Posts: 720

154

posted 2 years ago

2 +1 Quote Report

> **Thekla McDaniels wrote:**
>
> and don't mind me while I stumble around the idea, but if potential for corrosion is a major problem, isn't corrosion a result of electrolysis or some other process of conductivity and electron transfer, and if so, could the corrosion be tamed by setting up an anode and a cathode? And which ever the culvert ISN'T, install the other in a location it can easily be replaced ? Kind of like setting up a sacrificial corrosion depot that prevents corrosion in the culvert

Not crazy at all. This is used all the time in industry to protect tanks and piping. There is not that much constant current going into the tank, something like half an amp, but there are commercial systems that you can buy off the shelf to do this very thing. You install them at ground level, and send the current through the tank then to ground. They are used a lot in powerplants because the tanks are teeming with water from the boiler which can be corrosive with its dissolved oxygen.

I'm not sure where to buy them, maybe FW Webb or something, but they would not be expensive or big in size, about the size of a coffee can.

Heather Brenner

Posts: 35

Location: Helmville, Montana

1

posted 2 years ago

4 +1 Quote Report

in order to safely bury a container, you basically have to build a root cellar around it.

Anne Miller

steward

staff

Posts: 18325

posted 2 years ago

4 +1 Quote Report

I found these historic roots cellars that I thought folks might be interested in seein

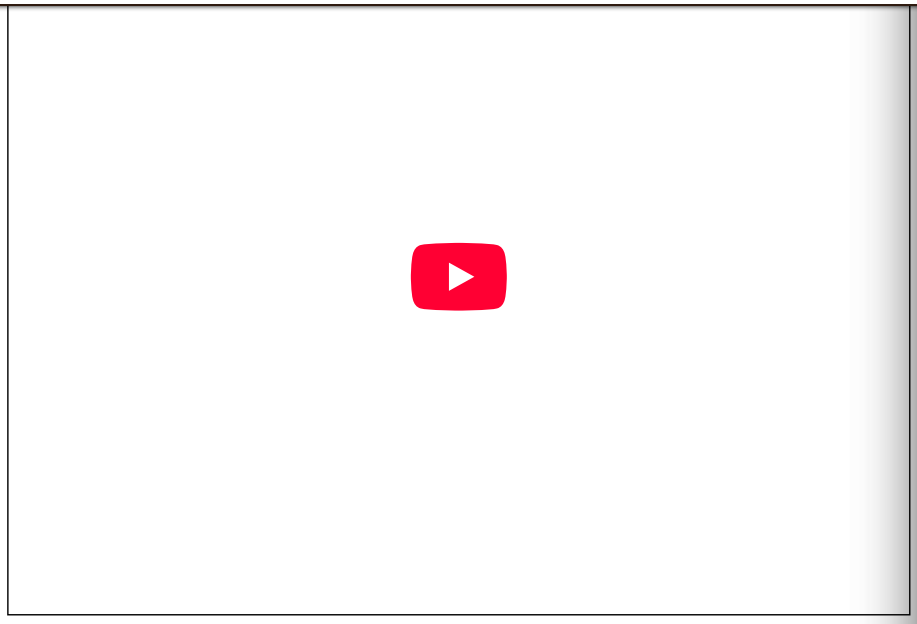
reply

4649

I like...

1840 Farmhouse Root Cellar Part 2

reply



This one is not historic though I feel it might be interesting:

Clark County Museum: How One Kept Food Cool in the Desert

Invasive plants are Earth's way of insisting we notice her medicines. Stephen Herrod Buhner
Everyone learns what works by learning what doesn't work. Stephen Herrod Buhner

Charlie Miller
Posts: 2

posted 2 years ago

2 +1 Quote Report

Not sure how to reply to a post on cell phone, anyway...

This is in reply to the buried connex containers lateral pressure issue. I plan to implement this engineering to my underground home, and I believe it will work for a connex conta

reply

Thekla McDaniels

gardener

staff

Posts: 3605

Location: Western Slope Colorado.

806

4

I like...

posted 2 years ago

2 +1 Thank Quote Report

> **Charlie Miller wrote:**
> Not sure how to reply to a post on cell phone, anyway...
>
> This is in reply to the buried connex containers lateral pressure issue. I plan to implement this engineering to my underground home, and I believe it will work for a connex container also. Enjoy.
>
> https://youtube.com/watch?v=0olpSN6_TCc&feature=share

Very interesting!
Charlie will you place the container, then backfill with dirt and layers of reinforcing? And will you be using fiberglass screen for your reinforcing or are there other materials for that?

Best luck: satisfaction

Greatest curse, greed

Nicole Alderman

steward

staff

Posts: 22373

Location: Pacific Northwest

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>
> I am not sure if it helps, but they are made pretty shallow, but underground, with brick floors and arched granite overhead.

I know this isn't really related to the subject of the thread, but I just wanted to say thanks! We didn't make it out to Fort Knox, but ever since my kids saw videos, they wouldn't stop talking about wanting to go to our local fort. We finally has a clear (but very cold) day and made it out there, and we all had a great time. It's not nearly as epic as your fort, and didn't teach us much about cellars (other than that concrete fort is constantly dripping inside and making stalactites and stalagmites!)

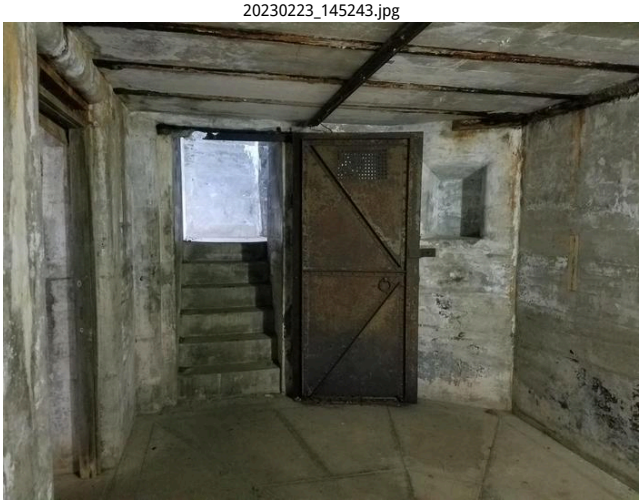
so many stalactites. I'm not even sure what they were formed of. Rust from the metal? Lime from the concrete? Something else?

20230223_144921.jpg

reply

Some of the concrete rooms were damp. You can see the water on these stairs, and some rooms had puddles in them.

20230223_145243.jpg



This room was dry, though.

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Jennifer Noonan

Posts: 9

Location: Maine woods

I like...

posted 2 years ago

3 +1 Quote Report

I built a root cellar. It was so moldy and full of growth that it could be in a horror movie! I don't live there anymore but have since learned you can put a bucket of rock salts in there which pull moisture out of the air. Then you can take out the bucket, evaporate the water and

reply

Nancy Reading

steward and tree herder

staff

Posts: 12100

Location: Isle of Skye, Scotland. Nearly 70 inches rain a year

6152

5 I like...

posted 2 years ago

6 +1 Quote Report

I stumbled across this fascinating souterrain last week at the North end of Skye. A 2000 year old tunnel was rediscoved when a roof lintel gave in about 20 years ago.

Skye souterrain

It stretches for about 40 ft under the hill towards the white stick . Unfortunately we weren't planning to visit and there was 5 inches of water in it, so we could only peek in the entrance. There is a raised chamber off to the side of the main corridor, which we could just see from the entrance.

plan of souterrain (enterance on right)

One would have thought they would have had some sort of drainage originally.

(image source)

How Permies works: https://permies.com/wiki/34193/permies-works-links-threads
My projects on Skye: The tree field, Growing and landracing, perennial polycultures, "Don't dream it - be it! "

I agree. Here's the link: http://stoves2.com

reply

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Mike Oehler's Low-Cost Underground House Workshop & Survival Shelter Seminar - 3 movie +2 Books Deal

Rainy PNW Underground Root Cellar Ideas

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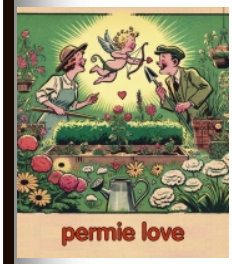
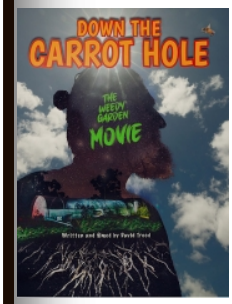
Root Cellaring by Mike and Nancy Bubel

Underground dry "Bunker" using sustainable materials - Triston Line

need storm shelter ideas



Meeting that special someone with values similar to yours - at a permaculture workshop or event



Down the Carrot Hole - a film by the Weedy Garden

fighting off colds and the like

More...

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